

fore, when a patient is found to have no positive node among those dissected by 3-FLND, it is likely that the risk of metastasis from the tumor may be small. Even in the 72 patients at stage pN1, hematogenous recurrence was seen in only 20%, and 37 have had no recurrence after 3-FLND. At least in these 37 patients, their carcinomas are considered not to have been a systemic disease but a localized one, although they did have lymph node metastases.

### 3-Field Dissection vs. 2-Field Dissection

Even after making the tumor stage uniform to stage pT3, the proportion of patients at stage pN0 in group B was smaller than in group A. That may be a reflection of the fact that there were some patients in group B who had had positive nodes only in the neck or upper mediastinum at surgery.

Although the diagnostic accuracy of tumor stage depends largely on the technique of diagnosis and the extent of the surgical procedure, pathological depth of tumor invasion is considered to be an objective tumor stage, irrespective of institutional or individual differences in diagnostic and surgical techniques. Meanwhile, patients with pT3 disease comprised the largest cohort not only in our series but also in other reported series of esophageal carcinoma [1,2,13,14].

The postoperative survival rate for patients with pT3 disease was favorable when they underwent 3-FLND, whereas that in group B was similar to the rates reported in the world literature [12]. After making background factors uniform and censoring deaths due to operative complications, the survival of patients who underwent 3-FLND was significantly better than that of patients who underwent 2-FLND. The trial of the adjuvant treatments has shown that these treatments had no significant effect on the survival of the patients [15]. Although the difference in the recurrence rates between the two groups was not statistically significant, the rate was 5% smaller in group A. The survival rate for patients with tumor recurrence in group A was also a little better, although not significantly so. Those factors together may have affected favorably the survival in group A.

Although the rates of recurrence due to hematogenous metastasis in both groups were similar, the rate of recurrence in the lymph nodes was significantly reduced in group A. The population of patients at stage pN0 in group B was significantly larger than in group A, and the rate of recurrence in patients at stage pN0 was significantly higher in group B. This suggests that some patients at stage pN0 in group B may have had undissected positive nodes in the upper mediastinum or neck, which later came to light as recurrence. In group A, nearly half of the patients were positive for metastasis in the cervical or upper mediastinal lymph nodes, most of which might have been left behind when they underwent 2-FLND

instead of 3-FLND. No patient with recurrence in the lymph nodes in group B survived the disease, irrespective of any treatment modality. By removing the positive nodes in the neck or upper mediastinum during the first operation, some patients in group A may have been saved from recurrence in the lymph nodes.

### CONCLUSIONS

Esophagectomy with three-field lymph node dissection suppressed lymph node recurrence of thoracic esophageal carcinoma, which may have contributed to improved survival of the patients.

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### REFERENCES

1. Lerut T, DeLeyn P, Coosemans W, et al.: Surgical strategies in esophageal carcinoma with emphasis on radical lymphadenectomy. *Ann Surg* 216:583-590, 1992.
2. Isono K, Sato H, Nakayama K: Results of nationwide study on three-field lymph node dissection of esophageal cancer. *Oncology* 48:411-420, 1991.
3. Kato H, Watanabe H, Tachimori Y, Iizuka T: Evaluation of neck lymph node dissection for thoracic esophageal carcinoma. *Ann Thorac Surg* 51:931-935, 1991.
4. Sugimachi K, Inokuchi K, Kuwano H, et al.: Patterns of recurrence after curative resection for carcinoma of the thoracic part of the esophagus. *Surg Gynecol Obstet* 157:537-540, 1983.
5. Mandard AM, Chasle J, Marnay J, et al.: Autopsy findings in 111 cases of esophageal cancer. *Cancer* 48:329-335, 1981.
6. Kato H, Tachimori Y, Watanabe H, Iizuka T: Evaluation of the new (1987) TNM classification for thoracic esophageal tumors. *Int J Cancer* 53:220-223, 1993.
7. Harmanek P, Sobin LH (eds): "International Union Against Cancer: TNM Classification of Malignant Tumors." Berlin: Springer-Verlag, 1987.
8. Tsurumaru M, Akiyama H, Udagawa H, et al.: Cervical-thoracic-abdominal lymph node dissection for intrathoracic esophageal carcinoma. In: Ferguson MK, Little AG, Skinner DB (eds): "Diseases of the Esophagus." New York: Futura, 1990.
9. Cutler SJ, Ederer F: Maximum utilization of the life-table method in analyzing survival. *J Chron Dis* 8:699-712, 1958.
10. Gehan EA: A generalized Wilcoxon test for comparing arbitrarily single-censored samples. *Biometrika* 52:203-224, 1965.
11. World Health Organization: "Histological Typing of Oesophageal and Gastric Tumors." Watanabe H, Sobin LH (eds). Berlin: Springer-Verlag, 1990.
12. Muller JM, Erasmi H, Sterzner M, et al.: Surgical therapy of oesophageal carcinoma. *Br J Surg* 77:845-857, 1990.
13. Tam PC, Cheung HC, Ma L, et al.: Local recurrence after subtotal esophagectomy for squamous cell carcinoma. *Ann Surg* 205:189-194, 1986.
14. Goldmic M, Maddern G, Le Prise E, et al.: Oesophagectomy by transhiatal approach or thoracotomy: A prospective randomized trial. *Br J Surg* 80:367-370, 1993.
15. Iizuka T: Surgical adjuvant treatment of esophageal carcinoma: A Japanese Esophageal Oncology Group experience. *Semin Oncol* 21:426-466, 1994.

### COMMENTARY

Although there have been proponents of very aggressive resection with extensive lymphadenectomies in at-

tempts to improve results with surgical treatment of cancer of the esophagus [1,2], many scholars have remained unconvinced of the benefits of such attempts [3,4]. Since most patients with esophageal carcinoma die of distant disease, even with what has been thought to be adequate local control, there has been the expectation that future improvements in survival in cancer of the esophagus would depend upon the development of better chemotherapy combinations. The experience of Kato and colleagues at the National Cancer Institute in Japan with three-field lymph node dissection (3-FLND) provides encouragement for the hope that advanced surgical techniques may improve the prognosis for this disease. They report an overall 5-year survival rate of 50.9% with three-field dissections, and although they do not report the 5-year survival rate for their historic controls, it was reported as 33.7% in a previous publication [5]. For 50 pT3 patients undergoing a 3-FLND, the cumulative 5-year survival was 36.8% vs. 22% for historic controls, who received only thoracic and abdominal lymphadenectomies, the thoracic lymphadenectomy not as extensive as the one reported for the 3-FLND. Lymphatic recurrence rate was significantly lower in the 3-FLND group, not unexpectedly, since more nodes were removed, but systemic recurrence rates were similar in both groups. Their conclusion is that 3-FLND is capable of influencing survival by decreasing lymph node recurrence rates, challenging the concept that lymphatic recurrence represents systemic rather than regional disease.

The fact that historical controls are employed intro-

duces problems of unidentified confounding variables and selection bias, so prospective randomized trials comparing 3-FLND with conventional esophagectomies will be required to be convincing. We think there has been a disappointing incidence of neck node recurrence following conventional esophagectomy with 10 cm margins [6], which can possibly be addressed either surgically or, perhaps, by external beam radiation therapy in the neck. Oncologists interested in cancer of the esophagus await confirmation of the results of Kato and colleagues.

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## REFERENCES

1. DeMeester TR, Zaninotto G, Johansson K-E: Selective therapeutic approach to cancers of the lower esophagus and cardia. *J Thorac Cardiovasc Surg* 95:42-54, 1988.
2. Akiyama H, Tsurumaru M, Kawamura T, Ono Y: Principles of surgical treatment for carcinoma of the esophagus. *Ann Surg* 194: 438-446, 1981.
3. Abe S, Tachibana M, Shiraishi M, Nakamura T: Lymph node metastases in resectable esophageal cancer. *J. Thorac Cardiovasc Surg* 100:287-291, 1990.
4. Orringer MB: Ten year survival after esophagectomy for carcinoma: Surgical triumph or biologic variation? *Chest* 96:970-971, 1989.
5. Kato H, Watanabe H, Tachimori Y, Iizuka T: Evaluation of neck lymph node dissection for thoracic esophageal carcinoma. *Ann Thorac Surg* 51:931-935m, 1991.
6. Peddada AJ, Harvey JC, Anderson PF, et al.: High dose rate (HDR) intraluminal radiation in a combined modality treatment plan for carcinoma of the esophagus. *J Surg Oncol* 52:160-163, 1993.